Citation for published version:
Hauff, S, Alewell, D & Hansen, N 2018, 'Further Exploring the Links between High Performance Work Practices and Firm Performance: A Multiple-mediation Model in the German Context', *German Journal of Research in Human Resource Management*, vol. 32, no. 1, pp. 5-26. https://doi.org/10.1177/2397002217728251

DOI:
10.1177/2397002217728251

Publication date:
2018

Document Version
Peer reviewed version

Link to publication

Hauff, Sven ; Alewell, Dorothea ; Hansen, Nina. / Further Exploring the Links between High Performance Work Practices and Firm Performance : A Multiple-mediation Model in the German Context. In: German Journal of Research in Human Resource Management. 2018 ; Vol. 32, No. 1. pp. 5-26. Copyright © 2017 SAGE Publications Ltd. Reprinted by permission of SAGE Publications.

University of Bath

Alternative formats
If you require this document in an alternative format, please contact:
openaccess@bath.ac.uk

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Download date: 05. May. 2023

Further Exploring the Links between High Performance Work Practices and Firm Performance:

A Multiple-mediation Model in the German Context

Hauff, S./Alewell, D./Hansen, N.K.

Sven Hauff, Helmut-Schmidt-University Hamburg, Faculty of Humanities and Social Sciences, Holstenhofweg 85, 22043 Hamburg, Germany. Email: hauff@hsu-hh.de; phone 0049 40 6541-28 83

Dorothea Alewell, University of Hamburg, Faculty of Business Administration, Moorweidenstraße 18, 20148 Hamburg, Germany, Email: dorothea.alewell@uni-hamburg.de, phone 004940428384101; fax 004940428386358 (corresponding author)

Nina Katrin Hansen, University of Bath, School of Management, Claverton Down, BA2 7AY Bath, United Kingdom, Email: N.K.Hansen@bath.ac.uk; phone 00441225 386567; fax 00441225 386473

Further Exploring the Links between High Performance Work Practices and Firm Performance: A Multiple-mediation Model in the German Context

Abstract

To improve our understanding of the relationships between high performance work systems and firm performance, several studies have analyzed the mediating effects of motivation-related or human capital-related variables. However, most of these have concentrated on single aspects and are U.S.-focused. We extend previous HRM research by simultaneously analyzing the relevance of four general mediating mechanisms: human capital, employee attitudes, employee performance, and operational performance. We apply structural equation modeling with formative constructs to data of 1,099 German firms. While our findings support the assumption of positive relationships between high performance work practices, the four mediating mechanisms, and firm performance, they also reveal some peculiarities attributable to the German context. Using formative constructs, we could also show that single high performance work practices have different effects on firm performance.

Keywords: High performance work practices; firm performance; mediation; human capital; employee attitudes; employee performance; operational performance

INTRODUCTION

As organizations are confronted with growing competitive challenges, they constantly search for ways to increase and enhance their overall performance. Against this backdrop, academics and practitioners have increasingly become involved with strategic human resource management (HRM), which seeks to explain the links between HRM and firm performance (Jackson et al., 2014). Therby, a particular focus has emerged on the concept of high-performance work practices (HPWP) (Appelbaum et al., 2000; Huselid, 1995) and the mechanisms through which HPWP influence overall firm performance. In their meta-analysis, Jiang et al. (2012b) identified 116 studies that analyzed mediating mechanisms between HRM and firm performance and showed that the relationship between HRM and firm performance is mediated by multiple aspects (e.g., through human capital, employee motivation, and operational performance).

However, our understanding of how HPWP contributes to firm performance remains work in progress (e.g., Boxall and Purcell, 2016; Guest, 2011; Jiang et al., 2012b; Saridakis et al., 2017). A primary drawback is the lack of integration of multiple aspects, as researchers have focused on selected motivation-related or human capital-related variables, while often disregarding key operational outcomes that encompass aspects such as productivity, quality, or innovation capability (Jiang et al., 2012b). The use of single mediators does provide valuable insights. However, it might also lead to biased results if other, potentially important mediators are omitted from analysis (Hair et al., 2017). Further, we don’t know if the established results hold equally in different settings. In particular, the contextual approach to HRM proposes considering the macro-social context, including political, societal, institutional, and cultural aspects (Brewster, 1999; Brewster and Mayrhofer, 2009). Since the concept of HPWP is largely U.S.-biased, there are doubts that its effects will be similar in different countries (e.g., Festing, 2012). Finally, previous research tends to summarize HPWP into a unidimensional construct that doesn’t consider the specific influences and significances of different HPWP.

Accordingly, while these studies usually show that HRM affects firm performance, they provide no practical relevant information in terms of where to focus any HRM-related investments (for recent criticism in this regard, see Beer, 2015; Kaufman, 2015).

Addressing these research gaps, our study analyzes the relationships between HPWP and firm performance, considering multiple pathways. Building on Jiang et al. (2012b), we consider four central mediating mechanisms: (1) human capital, (2) employee attitudes, (3) employee performance, and (4) operational performance. These mediators represent different organizational outcome levels (Dyer and Reeves, 1995) and thus provide a holistic analysis. In simultaneously examining these multiple-outcomes, we respond to Jiang et al. (2013: 1470), who claim that it is "critical for future research to investigate multiple mediators simultaneously in a single study."

Our empirical analysis is based on data of 1,099 German firms. By using German data, we address a specific socioeconomic context that, according to the varieties of capitalism (Hall and Soskice, 2001) and employment regime approaches (Gallie, 2007), is opposed to liberal regimes such as the U.S. Since it is questionable if concepts like HPWP lead to the same results as in the U.S. (Festing, 2012), our study provides valuable empirical evidence on the distinct relationships between HPWP and firm performance in a leading non-U.S. economy.

Our study also contributes to the literature by analyzing the relevance of different HRM domains and different HPWP for firm performance. In particular, we refer to the ability-motivation-opportunity (AMO) framework (Appelbaum et al., 2000; Lepak et al., 2006) and analyze how HPWP related to these domains influence the different outcome levels. By applying structural equation modeling with formative constructs, we are able to show how much each of the AMO domains and each HPWP contributes to increasing a firm's performance.

Overall, our study provides additional insights into the relationships between high-performance work practices and firm performance in Germany. In particular, our findings

show that the strength of the relationships between ability-enhancing, motivation-enhancing, and opportunity-enhancing HPWP and human capital and employee attitudes was not as expected based on previous literature. Thus, our study highlights that the peculiarities of the specific economic context should always be considered when analyzing HPWP effects on firm performance. Our findings also point to a differential importance of the considered HPWP: while some practices strongly relate to firm performance, others are not related at all. This challenges the assumption of HPWP as a homogeneous construct and provides opportunities to gain more practically relevant insights.

THEORETICAL BACKDROP AND HYPOTHESES

The Links between HPWP and Firm Performance

To understand HRM's effects on firm performance, research in strategic HRM has analyzed how consistent bundles of HRM practices (i.e. HRM systems) affect firm performance (e.g., Lepak et al., 2006; Guest, 2011; Jackson et al., 2014). Particular attention has been and is still being paid to HPWP that represent HRM practices intended to increase employee performance and subsequently firm performance. Even though there is still no agreement on which HRM practices represent HPWP (e.g., Posthuma et al., 2013), researchers usually refer to the AMO framework, according to which employee performance is a function of employees' abilities, motivation, and opportunities to perform (Appelbaum et al., 2000; Lepak et al., 2006). In this perspective, ability, motivation, and opportunities to perform represent three primary HRM policy domains, and different HRM practices are directly instrumental for each of these domains. Specifically, comprehensive recruitment/selection and continuous training represent ability-enhancing HRM practices; profit-based pay, extensive benefits, clear career paths, and job security represent motivation-enhancing HRM practices; and task variety, semi-autonomous work groups, empowerment, and information-sharing represent opportunity-enhancing HRM practices (Jiang et al., 2012a; 2012b).

By facilitating employees' abilities, motivation, and opportunities to perform, HPWP are assumed to further the realization of firm goals and to enhance firm performance; this has been demonstrated in a great variety of studies (e.g., Combs et al., 2006; Jackson et al., 2014; Saridakis et al., 2017; Subramony, 2009). However, the use of HPWP has not been without critique. For instance, Godard (2004) pointed out that the use of HPWP might be risky since their positive effects might be offset by their costs (e.g., reduced flexibility or cost through incentives, training etc.). In addition, HPWP might also be associated with higher work intensity and stress, which could lead to reduced job satisfaction, higher turnover, and – thus – lower performance.

Mediating Mechanisms

To better understand the relationships between HPWP and firm performance, researchers have increasingly paid attention to the mediating mechanisms that explain these relationships (Jackson et al., 2014). In their influential meta-analysis, Jiang et al. (2012b) could identify 116 studies that address different intermediate variables. Their results show that HRM practices designed to increase ability, motivation, or opportunities impact financial performance via improving the human capital and employee motivation, thereby reducing voluntary employee turnover and enhancing operational outcomes. This evidence has been seen as a confirmation of the mediating links between HRM and performance (Boxall and Purcell, 2016). However, as noted, several issues remain (i.e. the lack of more holistic studies, the doubts about HPWP effects in different economic contexts, and the tendency to summarize HPWP into a unidimensional construct, which doesn't consider the specific influences and significances of different HPWP. We seek to further analyze HPWP effects on firm performance via multiple pathways, addressing a specific context (i.e. Germany) and providing useful practical implications. In particular, building on Jiang et al. (2012b), we consider the following mediating mechanisms in the relationships between HPWP and firm performance: (1) human capital,

(2) employee attitudes, (3) employee performance, and (4) operational performance. The respective research hypotheses follow.

Human capital. For organizations, having human capital with the right knowledge, skills, and abilities is a source of competitive advantage (Coff and Kryscynski, 2011). Accordingly, the improvement of human capital represents a key HR outcome (Lepak et al., 2006). This goal can be achieved directly though ability-enhancing HRM practices such as comprehensive recruitment, employee selection, and continuous training. These HPWP contribute to employees having the right knowledge, skills, and abilities and should therefore be positively related to human capital. Besides these direct effects, there might be additional effects through HRM practices instrumental to the other HRM policy domains, i.e. motivation-enhancing or opportunity-enhancing HRM practices (Jiang et al., 2012b). In particular, profit-based pay and extensive benefits are often supposed to attract highly qualified employees. Thus, while these practices are meant to improve motivation, they should also impact on human capital. The same can be expected of opportunity-enhancing HRM practices: task variety, a flexible job design based on autonomous work groups, and information-sharing increase opportunities to contribute, but also they facilitate individual learning and skills development (Huselid, 1995; Combs et al., 2006; Takeuchi et al., 2007; Liao et al., 2009). In sum, all components of HPWP are expected to contribute to increased human capital. However, as Jiang et al. (2012b) have shown, human capital should be more strongly related to ability-enhancing HRM practices than to motivation-enhancing or opportunity-enhancing HRM practices. In line with this research, we posit:

Hypothesis 1a: Ability-enhancing, motivation-enhancing, and opportunity-enhancing HPWP positively relate to human capital.

Hypothesis 1b: Ability-enhancing HPWP are more positively related to human capital than motivation-enhancing and opportunity-enhancing HPWP.

Employee attitudes. In addition to human capital, HPWP should also positively impact on employee attitudes, i.e. motivation, job satisfaction, and organizational commitment (Lepak et al., 2006; Paauwe, 2009). Again, we expect a strong relationship, with HPWP aiming mostly at motivational factors such as profit-based pay, extensive benefits, clear career paths, and employment security. These practices not only provide extrinsic rewards in order to foster motivation, but also – considering social exchange theory (Blau, 1964) and the norm of reciprocity (Gouldner, 1960) – increase employee effort, satisfaction, and commitment by showing that employees are valued by the firm (Combs et al., 2006; Jiang et al., 2012b). This positive relationship might be complimented by opportunity-enhancing HPWP (Jiang et al., 2012b). The specific job design in HPWP is supposed to positively influence employee attitudes. Employees who work in self-directed teams experience greater autonomy and show higher satisfaction levels and stronger commitment. Further, HPWP such as empowerment and information-sharing facilitate this latitude (Combs et al., 2006). Finally, ability-enhancing HPWP might also positively relate to employee attitudes. Comprehensive recruitment, employee selection, and continuous training ensure that employees have the right knowledge, skills, and abilities to cope with daily work demands, which – in turn – may increase satisfaction and commitment (Bakker and Demerouti, 2007). In sum, we expect HPWP directed at all three HRM policy domains to contribute to employee attitudes. However, since Jiang et al. (2012b) have empirically demonstrated that the relationship between employee motivation and motivation-enhancing HPWP is stronger than those between employee motivation and ability-enhancing and opportunity-enhancing HPWP, we expect the relationship strengths to vary. Accordingly:

Hypothesis 2a: Ability-enhancing, motivation-enhancing, and opportunity-enhancing HPWP positively relate to employee attitudes.

Hypothesis 2b: Motivation-enhancing HPWP are more positively related to employee attitudes than ability-enhancing and opportunity-enhancing HPWP.

Employee performance. A primary goal of HPWP is to increase employee performance (Huselid, 1995). Securing the transformation of labor capacity into employee performance is a key challenge of HRM, and it can be argued that HPWP help to meet this challenge. We argue that there is a link between HPWP and employee performance because, through HPWP, employees have opportunities to apply their ability and motivation and to interact effectively with colleagues and customers (Batt, 2002). Since HPWP are intended to focus employee behaviors on meeting "immediate performance goals" (Batt and Colvin, 2011: 700), it is suggested that they lead to higher individual performance levels. Overall, HPWP should enable employees to work more productively and to make better decisions (Combs et al., 2006). However, we expect that HPWP positive impacts on employee performance are mediated by human capital and employee attitudes. Employees can only perform well if they have the necessary knowledge, skills, and abilities (Appelbaum et al., 2000; Lepak et al., 2006). Further, employees should also be motivated to leverage their knowledge, skills, and abilities (Combs et al., 2006). Therefore:

Hypothesis 3: The positive relationship between ability-enhancing, motivation-enhancing, and opportunity-enhancing HPWP and employee performance are mediated by human capital and employee attitudes.

Operational performance. In accounting for the often-disregarded internal performance of organizations (Guest, 2011), it can be suggested that HPWP positively impact operational performance, which refers to organizational capabilities such as productivity, quality, and innovation capabilities (e.g., Huselid, 1995; Jiang et al., 2012b; Su and Wright, 2012). In contrast to general financial performance measures, operational outcomes are much closer to the

employee behaviors (Dyer and Reeves, 1995). HPWP are supposed to positively impact operational performance, because HPWP such as self-managing teams, flexible job designs, and information exchange facilitate the connection between individuals and give them opportunities to apply their human capital and increase their individual performance and, thus, operational performance (Combs et al., 2006; Gittell et al., 2010). Semi-autonomous work groups as a key HPWP also increases organizational productivity, because employees exhibit superior learning and problem-solving capabilities, which help them to better handle customers and new technology as well as to customize products and services (Batt, 2002). Further, selective hiring, intensive information-sharing, and training may also further the development of shared mental models in the form of mutual knowledge sets, respect, and shared beliefs and attitudes regarding work tasks, colleagues, and organizational goals. The resulting relational coordination should enable employees from different functions to better coordinate their work and give them opportunities to improve quality and efficiency (Combs et al., 2006). The results are fewer missed signals between employees, optimized communication processes, and more productively utilized organizational resources, which lead to more efficient outcomes such as faster turnaround times and shorter throughput times (Gittell et al., 2010). In sum, HPWP facilitate organizational flexibility, productivity, and efficiency, leading to higher operational performance (Combs et al., 2006; Batt and Colvin, 2011). However, HPWP effects on operational performance should not be considered to be direct: If employees get opportunities to take decisions and work autonomously, operational performance should be strongly influenced by employee performance (Dyer and Reeves, 1995), which – in turn – depends on human capital and employee attitudes (Appelbaum et al., 2000; Combs et al., 2006; Lepak et al., 2006). Therefore, we posit:

Hypothesis 4: The positive relationships between ability-enhancing, motivation-enhancing, and opportunity-enhancing HPWP and operational perfor-

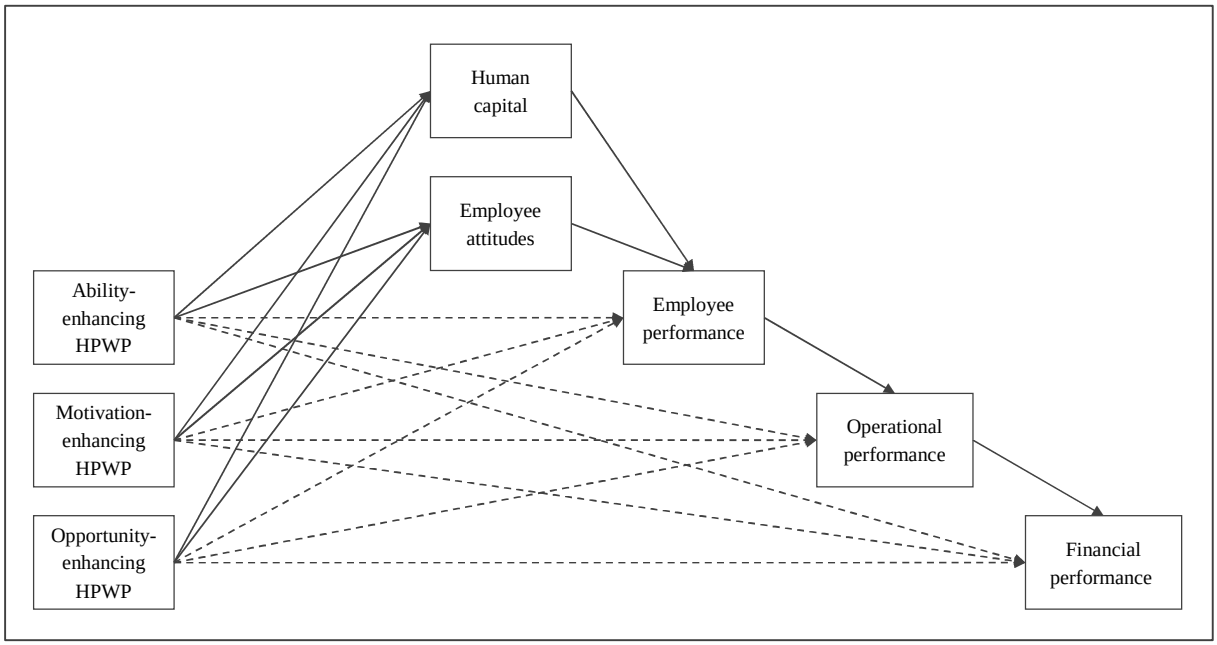
mance are mediated by human capital, employee attitudes, and employee performance.

So far, we have argued that HPWP positively influence human capital and employee attitudes, which positively impact individual employee performance, which – in turn – contributes to operational performance. Ultimately, operational performance positively relates to financial performance. Referring to Jiang et al. (2012b: 1269), the "rationale for the positive relationship between operational outcomes and financial outcomes is clear in the literature," and operational outcomes such as productivity, quality orientation, and service relate directly to profitability (Curtis et al., 1995). Thus, we propose a mediating model in which HPWP indirectly relate to financial outcomes via human capital, employee attitudes, employee performance, and operational performance, in sequence. Accordingly:

Hypothesis 5: The positive relationships between ability-enhancing, motivation-enhancing, and opportunity-enhancing HPWP and financial performance are mediated by human capital, employee attitudes, employee performance, and operational performance.

The overall research model we assess is depicted in Figure 1.

Figure 1. Conceptual Model



DATA, MEASURES, AND METHOD

Dataset

The following analysis is based on data collected via highly structured computer-aided telephone interviews with chief executives and HR managers of firms in Germany. Because we are especially interested in outcomes at different levels, responses from chief executives and HR managers are important, since they are usually more knowledgeable about these issues (Huselid and Becker, 2000). Such a research setting also allowed us to conduct interviews in a large number of firms.

The data collection was conducted in 2012 and targeted firms with at least 20 employees in the following sectors: chemicals and pharmaceuticals, mechanical engineering, banking and insurance, and professional services (legal and accounting services as well as business consultancies). We chose this sector distribution so as to have the opportunity to analyze a comparatively large number of firms in the service segment as well as in classical industrial segments, and to have two sectors each in the service and industrial segments.

We derived contact information from the German Chamber of Industry and Commerce (GCIC) database that all German firms (with the exception of handicraft businesses, free professions, and farms) are required by law to join. The number of randomly sampled firms in these sectors was 5,388, out of a population of 8,100 firms. Of the firms contacted, 1,175 took part, which left us with a satisfying response rate (21.8%). However, a first analysis of the data revealed that 76 firms did not meet the selection criteria (size and industry), or provided invalid answers. Thus, usable data is available for 1,099 firms.

The sample was disproportionally stratified for industry, resulting in an approximately uniform distribution (23.9% chemicals and pharmaceuticals, 24.7% mechanical engineering, 28.0% banking and insurance, and 23.3% professional services). However, based on the distribution in the GCIC database, we were able to weight the data, resulting in the weighted data being representative for all German firms with the aforementioned criteria. The questionnaire acknowledged that firms may operate multiple HRM systems in one organization. If firms stated that they differentiate their HRM for different employee groups, all questions related to HRM referred to the employee group that is most important for the firm's economic success (as suggested by Osterman, 1987; see also Delery and Doty, 1996). If HRM was not differentiated for different employee groups, we formulated questions in such a way that they encompassed all the firm's employees. Thus, each firm is represented with its most important HRM system in terms of the value production of the employees working under this system.

Measures

High-performance work practices. A basic drawback in the strategic HRM literature is that there is still no agreement on which HRM practices should be included in HPWP (e.g., Posthuma et al., 2013). Following Jiang et al. (2012a; 2012b), we referred to the AMO framework (e.g., Appelbaum et al., 2000; Lepak et al., 2006), and included comprehensive recruitment/selection and continuous training as ability-enhancing HPWP; profit-based pay,

extensive benefits, clear career paths, and job security as motivation-enhancing HPWP; and task variety, semi-autonomous work groups, empowerment, and information-sharing as opportunity-enhancing HPWP (Table 1). We measured all items by the extent of the informants' agreement with statements along a five-item scale (ranging from 1 = *strongly disagree* to 5 = *strongly agree*). Constructs for ability-enhancing, motivation-enhancing, and opportunity-enhancing HPWP were created using formative measurement models.

Human capital and employee attitudes. We measured *human capital* as a formative construct with two indicators: qualified employees and up-to-date knowledge. We also measured *employee attitudes* as a formative construct with three indicators: motivation, job satisfaction, and organizational commitment (Table 1). Since we wanted to capture different aspects of employee attitudes, and in order to have a manageable questionnaire that does not lead to mental fatigue, we used single items for motivation, job satisfaction, and organizational commitment (response categories ranged from 1 = *does not apply at all* to 5 = *fully applies*).

Employee performance, operational performance, and corporate financial performance. We measured *employee performance* with one indicator for the performance of the employee group that is most important for a firm's economic success. We used a single indicator in order to have a simple measurement instrument that applies to different organizational contexts, since our study includes firms from different sectors. Also, employee performance at the group level should be easily and uniformly imagined by chief executives and HR managers, which justifies the use of a single-item measure (Huselid and Becker, 2000; Bergkvist and Rossiter, 2007). With reference to Jiang et al. (2012b), Huselid (1995) and Su and Wright (2012), we measured *operational performance* as a formative construct that includes productivity, quality, and innovation capability. We measured *financial performance* with one item for perceived relative profits (see Table 1). Consistent with other studies that applied perceptual performance measures in multi-industry samples (e.g., Delaney and Huselid, 1996; Wall

et al., 2004), we asked respondents to assess their operational and financial performance, compared to that of their competitors (response categories ranged from 1 = *does not apply at all* to 5 = *fully applies*).

Table 1. Indicators and Measures

Construct	Indicators	Measures
Ability-enhancing HPWP	Comprehensive recruitment/selection	The recruitment/selection process for these employees is comprehensive.
	Continuous training	There is continuous training for these employees.
Motivation-enhancing HPWP	Profit-based pay	Compensation/rewards for these employees are based on firm profits.
	Extensive benefits	Compensation/rewards for these employees include an extensive benefits package.
	Clear career paths	These employees have clear career paths in the organization.
	Job security	These employees have long-term perspectives.
Opportunity-enhancing HPWP	Task variety	These employees perform jobs that include a wide variety of tasks.
	Semi-autonomous work groups	These employees work in semi-autonomous work groups.
	Empowerment	These employees perform jobs that empower them to make decisions.
	Information-sharing	Superiors and employees engage in intensive information exchange.
Human capital	Qualified employees	We have highly qualified employees.
	Up-to-date knowledge	Our employees are equipped with up-to-date knowledge.
Employee attitudes	Motivation	Our employees are highly motivated.
	Job satisfaction	Our employees show very high job satisfaction.
	Commitment	Our employees show very high commitment.
Employee performance	Performance of the employee group most important for the firm's economic success	Our employees show very high performance levels.
Operational performance	Productivity	Compared to our competitors, we realize a very high productivity.
	Quality	Compared to our competitors, we realize a very high quality level.
	Innovation capability	Compared to our competitors, we realize a very high innovation level.
Financial performance	Profits	Compared to our competitors, we realize a very high profit.

Control variables. As control variables we used firm size (number of employees) and industry (chemicals and pharmaceuticals, mechanical engineering, banking and insurance, and professional services). Both variables represent major context variables, since they affect a large set

of variables (e.g., costs, capital intensity, pressures of competition, etc.) (Hansen and Wernerfelt, 1989) and thus might influence our outcome variables.

Method

To analyze the presented path model and to test our hypotheses, we applied partial least squares structural equation modeling (PLS-SEM). Compared to covariance-based SEM, the PLS-SEM approach is particularly suitable for theory development and the explanation of variance (for a detailed comparison, see e.g., Hair et al., 2017.). To compute the suggested path model, we used the statistical software application SmartPLS 3.0 (Ringle et al., 2015).

A key advantage of PLS-SEM is that it allows one to easily to incorporate formative measurement models that best reflect the idea of HRM systems (e.g., Jiang et al., 2012a; 2012b). In contrast to reflective measurement models, formative measurement models are based on the assumption that each indicator forms the construct. Thus, the indicators are not interchangeable (as in reflective measurement models), since every indicator captures a specific aspect of the construct (Coltman et al., 2008; Hair et al., 2017). Using formative measurement models allows one to specify each indicator's weight; thus, detailed statements about each indicator's particular importance are possible. The informative value of such an analysis can be further increased by using importance-performance map analysis (IPMA) implemented in SmartPLS 3.0 (Hair et al., 2017; Ringle and Sarstedt, 2016). IPMA contrasts the total effects of different indicators or constructs on a specific outcome (i.e. their importance) with the average (latent) score of these indicators or constructs (i.e. their performance). Thus, IPMA allows one to identify the indicators or constructs that are of high importance as well as to identify areas for improvement, which is of particular value for HRM practice.

To detect multicollinearity, we assessed the variance inflation factors (VIFs), which all remained below 1.6, and thus below the recommended threshold of 5.0. Accordingly, multicollinearity is not an issue for the measurement of our formative constructs. To address

the issue of common method bias (Podsakoff et al., 2003), we performed Harman's single-factor test in that no single, general factor was extracted. We also performed a marker variable analysis, a suitable technique to estimate common method variance (Schaller et al., 2015). Since no specific marker variable was included in the questionnaire, we used the smallest observed correlation among all the substantive variables as a proxy as suggested by Lindell and Whitney (2001). Lowest correlations turned out to be below r = 0.001; thus, common method bias is unlikely to cause substantial bias in terms of the over-estimation of the effects in our estimated model.

RESULTS

Table 2 shows the standardized path coefficients, their significance levels, and the adjusted R^2 values. The R^2 values range from 0.128 (firm performance) to 0.434 (employee performance). These are common values in HRM research (e.g., Baluch et al., 2013; Ceylan, 2013; Jayawardana et al., 2013) and are therefore satisfactory. Notably, the explanatory power decreases the more distal the outcomes are.

A comparison of the path coefficients reveals that ability-enhancing, motivation-enhancing, and opportunity-enhancing HPWP positively relate to human capital, which supports Hypothesis 1a. However, ability-enhancing HPWP are not more positively related to human capital than motivation-enhancing and opportunity-enhancing HPWP, as suggested by Hypothesis 1b. In contrast, the relationship between human capital and motivation-enhancing HPWP is strongest, followed by opportunity-enhancing HPWP and then ability-enhancing HPWP. Accordingly, Hypothesis 1b is not supported.

Table 2. Overall PLS Results

	Human capital	Employee attitudes	Employee performance	Operational performance	Financial performance
Ability-enhancing HPWP	0.209***	0.039	-0.010	0.139***	0.025
Motivation-enhancing HPWP	0.251***	0.192***	0.032	0.164***	0.121***
Opportunity-enhancing HPWP	0.236***	0.434***	0.021	0.166***	0.020
Human capital			0.289***		
Employee attitudes			0.417***		
Employee performance				0.215***	
Operational performance					0.272***
Size	-0.003	-0.024	0.036	0.034	0.050*
Industry (ref. mechanical engineering)					
Banking and insurance	-0.058*	-0.029	-0.074**	-0.266***	0.087**
Chemicals and pharma	-0.070*	0.006	-0.028	-0.034	0.029
Professional services	0.110***	0.022	0.086***	-0.137***	0.014
R^2	0.301	0.303	0.434	0.255	0.128

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Regarding Hypothesis 2a, our results show that motivation-enhancing and opportunity-enhancing HPWP positively relate to employee attitudes, but not ability-enhancing HPWP. Thus, Hypothesis 2a is only partially supported. Further, we see that the relationships between opportunity-enhancing HPWP and employee attitudes are much stronger than those between motivation-enhancing HPWP and employee attitudes. Thus, Hypothesis 2b is also not supported.

To assess the remaining hypotheses, Table 3 shows each construct's direct, indirect, and total effects. Thereby, we followed Preacher and Hayes (2008) to analyze the mediation hypotheses and bootstrapped the sampling distribution of the indirect effects. If the indirect effect is not significant, there is no mediation. If both the direct and the indirect effects are significant, there is a partial mediation. A full mediation is indicated if the direct effect is not significant, whereas the indirect effect is significant (Nitzl et al., 2016).

Our results show that almost all indirect effects are significant. The only exception was the relationship between ability-enhancing HPWP and operational performance via human capi-

tal/employee attitudes and employee performance. Accordingly, Hypotheses 3 and 5 are fully supported, and there is partial support for Hypothesis 4. Interestingly, regarding Hypothesis 3, we find full mediation. In contrast, regarding Hypotheses 4 and 5, we find several direct relationships, indicating a partial relationship. We will return to this during our discussion.

Table 3. Analysis of Mediating Effects

Mediator relationship	Direct effect	Indirect effect	Total effect
Ability-enhancing HPWP → human capital/employee attitudes → employee performance	-0.010	0.077***	0.067
Motivation-enhancing HPWP → human capital/employee attitudes → employee performance	0.032	0.153***	0.185***
Opportunity-enhancing HPWP → human capital/employee attitudes → employee performance	0.021	0.249***	0.270***
Ability-enhancing HPWP → human capital/employee attitudes → employee performance → operational performance	0.139***	0.014	0.153***
Motivation-enhancing HPWP → human capital/employee attitudes → employee performance → operational performance	0.164***	0.040***	0.203***
Opportunity-enhancing HPWP → human capital/employee attitudes → employee performance → operational performance	0.166***	0.058***	0.225***
Ability-enhancing HPWP → human capital/employee attitudes → employee performance → operational performance → firm performance	0.025	0.042***	0.067
Motivation-enhancing HPWP → human capital/employee attitudes → employee performance → operational performance → firm performance	0.121***	0.055***	0.177***
Opportunity-enhancing HPWP → human capital/employee attitudes → employee performance → operational performance → firm performance	0.020	0.061***	0.081

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Finally, Table 4 provides the indicator weights, while Figure 2 shows the IPMA results. Based on these results, we may state that most HPWP contribute to the various constructs and their effects. The only exceptions are profit-based pay and semi-autonomous work groups, which don't contribute significantly. The comparison between importance and performance reveals that job security has the highest importance as well as highest performance; this means that job security is most important for financial performance, but is also mostly guaranteed to employees. Further HPWP with fairly high influences are continuous training, in-

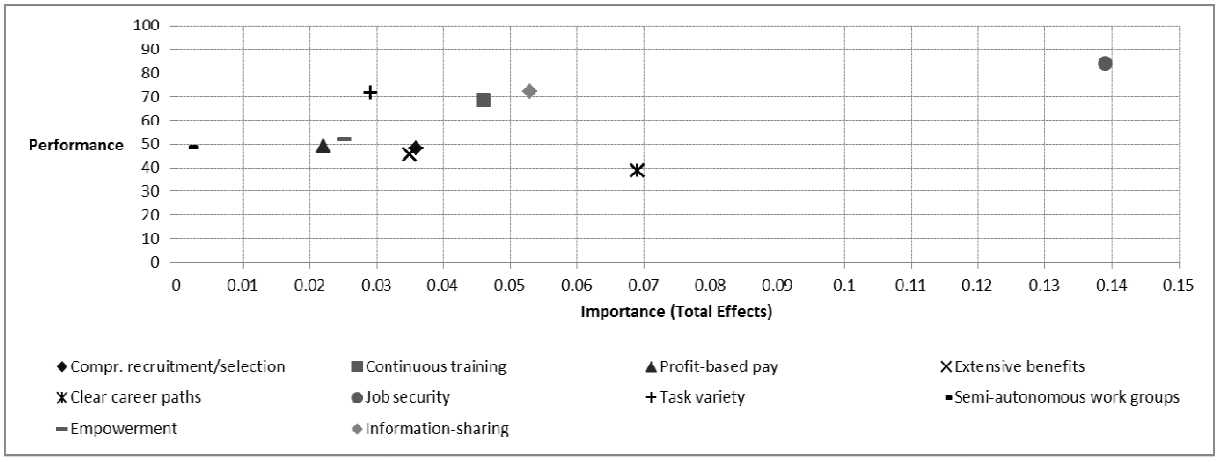
formation-sharing, and career opportunities, with the latter having the highest room for improvement.

Table 4. Indicator Weights in the PLS Path Model

Construct	Indicators	Weights	t-values
Ability-enhancing HPWP	Comprehensive recruitment/selection	0.533***	5.999
	Continuous training	0.690***	8.725
Motivation-enhancing HPWP	Profit-based pay	0.127	1.710
	Extensive benefits	0.196**	2.775
	Clear career paths	0.389***	5.925
	Job security	0.785***	16.622
Opportunity-enhancing HPWP	Task variety	0.357***	5.563
	Semi-autonomous work groups	0.028	0.470
	Empowerment	0.315***	5.049
	Information-sharing	0.658***	12.821
Human capital	Qualified employees	0.497***	9.876
	Up-to-date knowledge	0.651***	13.938
Employee attitudes	Motivation	0.620***	10.605
	Job satisfaction	0.474***	6.624
	Commitment	0.081	1.584
Employee performance	Performance of the employee group most important for the firm's economic success	1.000	-
Operational performance	Productivity	0.408***	6.031
	Quality	0.459***	7.221
	Innovation capability	0.433***	6.077
Financial performance	Profits	1.000	-

Notes: Significance levels based on bootstrapping procedure with 5,000 subsamples, whereby the no-sign change option was selected; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure 2. The Importances and Performances of HPWP for Financial Performance



DISCUSSION AND CONCLUSION

Our empirical study shows that HPWP positively impact financial performance via human capital, employee attitudes, employee performance, and operational performance. Thus, in general, our research provides further evidence for the universal effectiveness of HPWP (e.g., Combs et al., 2006; Lepak et al., 2006; Posthuma et al., 2013; Subramony, 2009). However, our results also point out some peculiarities that seem to relate to the German context. In particular, we saw that the strength of the relationships between ability-enhancing, motivation-enhancing, and opportunity-enhancing HPWP and human capital were not as expected based on the findings of Jiang et al. (2012b). While Jiang et al. (2012b) found that ability-enhancing HRM practices related more strongly to human capital than other HRM practices, we found that ability-enhancing HPWP relate less strongly to human capital than motivation-enhancing and opportunity-enhancing HPWP. Germany's employment system is characterized by a strong initial dual vocational system that leads to highly standardized qualifications. In turn, this has led to less formalized and specific selection methods (Festing, 2012), which might explain the relatively low influence of ability-enhancing HPWP on human capital. In Germany, there is also a strong focus on firm-specific skills (Amable, 2003). Accordingly, employment is usually long-term-oriented, and employees are guaranteed high autonomy and discretion in order to foster and enable the investment in and transfer of firm-specific skills. Thus, motivation-enhancing and opportunity-enhancing HPWP are crucial to human capital.

Another difference concerns the relationship between ability-enhancing, motivation-enhancing, and opportunity-enhancing HPWP and employee attitudes. While Jing et al. (2012b) found motivation-enhancing HRM practices to relate more positively to employee motivation than other HRM practices, we found that opportunity-enhancing HPWP relate more strongly to employee attitudes than motivation-enhancing HRM practices. Again, an explanation of these differences can be found in the German context. Previous research has shown that motivation-enhancing HPWP such as job security are less important for employee

attitudes if there is a strong social security net (Debus et al., 2012), which is the case in Germany. Further, the strong influence of opportunity-enhancing HRM practices can be attributed to the fact that highly skilled employees are traditionally granted high autonomy and discretion (Whitley, 2003). In addition, since the acceptance of power distance is comparatively low in Germany, opportunities to participate are crucial for positive employee attitudes (Drabe et al., 2014; Hauff and Richter, 2015).

Besides these particular findings on the strength of the relationships between HPWP and human capital and employee attitudes, our analysis provides detailed evidence that HPWP effects differ depending on the outcome level analyzed. Again, our results differ from those of Jiang et al. (2012b), who found a similar explained variance across the different outcome levels – which seems unexpected. For instance, Guest (2011: 10) wrote: "Despite the presence of quite well-established models linking HRM to performance through the impact of HRM on workers' attitudes and behavior, their link to internal performance such as productivity and quality and through this to external measures such as sales and profit per employee, very few studies have explored this chain. We would expect a stronger association between HRM and proximal rather than distal outcomes." Our findings support the latter assumption: HPWP have much stronger relationships with employee performance, a weaker relationship with operational performance, and an even weaker relationship with financial performance. Thus, by including different mediators on different outcome levels, and not focusing on single mediators, which could inflate effects, our results seem to be more realistic. A simple explanation is that more distal outcomes are influenced more heavily by factors beyond the reach of HRM. For instance, operational performance also depends on internal processes, material flows, logistics, production technology, etc. Financial performance further depends on the market segment, consumer structure, taxes, or the general situation of the economy. Thus, it is unsurprising that HPWP relationships are stronger with more proximal outcomes of HRM.

Turning to the mediating mechanisms within the HPWP-financial performance relationship, our results have largely supported all our mediation hypotheses (i.e. Hypotheses 3 and 5, which are fully supported, and Hypothesis 4, which is partially supported). Interestingly, we found that the positive relationship between ability-enhancing, motivation-enhancing, and opportunity-enhancing HPWP and employee performance are fully mediated by human capital and employee attitudes (Hypotheses 3). In contrast, even though we found partial mediations that show that a significant part of the total effects stems from the mediating mechanisms, we found comparatively high direct effects of ability-enhancing, motivation-enhancing, and opportunity-enhancing HPWP on operational performance, as well as of motivation-enhancing HPWP on financial performance. A key conclusion is that HPWP influence operational and financial performance via other mechanisms beyond employee performance. At first sight, this conclusion seems counter-intuitive if HPWP are seen as measures to increase employee performance. However, HPWP may trigger performance effects through employees that are not directly ascribed to employee contributions. For instance, empowerment may give employees opportunities to contribute directly within given structures and processes as well as opportunities and necessary means to improve structures and to increase the efficiency of internal processes. Efficient internal processes increase operational and financial performance, but are usually not directly attributed to employee performance.

A final contribution of our analyses is the application of a formative HPWP construct, by which we are able to illustrate the specific influence and significance of each underlying HPWP. Our results imply that some HPWP are not at all related to firm performance (i.e. profit-based pay and semi-autonomous work groups), while other HPWP strongly relate to firm performance, especially job security, continuous training, information-sharing, and career opportunities. Thus, our results provide a basis for more detailed practical implications and yield further support for the criticism of common measurement approaches, responding to recent calls to use formative measurement approaches in strategic HRM (e.g., Jiang et al.,

2012b): reflective scales and commonly used simple additive indices don't reveal the relative relevance of single HPWP in the overall HRM system. In contrast, a formative measurement approach provides empirical evidence to distinguish between core HPWP that drive performance and fairly peripheral HPWP (see also Posthuma et al., 2013).

Our results have limitations: First, our research is based on a cross-sectional study design. This seems appropriate, since our hypotheses focus on the relationships between HPWP and different outcome levels, rather than the implementation of HPWP and the subsequent effects. Nonetheless, longitudinal studies could account for HPWP long-term effects. Second, the estimation of our path model is based on perceptional measures instead of objective data. Several empirical studies have shown that there are statistically strong relationships between perceptual and 'hard' performance measures (Delaney and Huselid, 1996; Su and Wright, 2012). Nonetheless, future studies should further integrate objective measures so as to confront them with subjective measures. Third, our study is based on a single-respondent approach. Given that our empirical design addresses one specific employee group, i.e. the employee group that is most important for a firm's economic success, and that our focus is on the outcomes of HPWS, the responses by chief executives and HR managers seem legitimate, because they usually have a good or even better knowledge of these issues than individual employees (Huselid and Becker, 2000). However, a multirespondent approach (i.e. collecting information from both managers and individual employees) could provide additional insights (e.g., Jiang et al., 2013). Fourth, some of our measures are based on single items, an approach we chose owing to the broad scope of our analysis and the resulting necessity to limit the questionnaire's length. Thus, researchers may apply more sophisticated measures. Finally, we focus on employee-related mediating mechanisms in the links between HPWP and financial performance. However, as Jiang et al. (2012b) suggest, there may be other paths, such as organizational capital – in the form of internal fit, flexibility, and social capital – through which HRM can contribute to financial outcomes.

Besides the overcoming of these limitations, there are further paths for future research. In taking the best practice criticisms seriously, the concept of *equifinality* (Doty et al., 1993) is a key area for future research in the HPWP context (Posthuma et al., 2013). The principle of equifinality refers to the assumption of functional equivalence in organizational design and the fact that an organization "can reach the same final state from different initial conditions and by a variety of paths" (Katz and Kahn, 1978: 30). In accordance with its contextual forces, an organization can choose between alternative configurations of relevant factors to reach a desired end state – for instance, the same level of organizational effectiveness. Concerning HPWP, it can be assumed that several configurations of HPWP may likewise be effective in reaching higher firm performance (Delery and Doty, 1996; Hauff et al., 2014) and a unique source of sustained competitive advantage (Barney, 1991). Accordingly, researchers may study the complexity of the HPWP concept by testing mediation effects in their specific research contexts.

Our findings reveal several implications for HRM practices. In line with previous research, we argue that firms should use HPWP, because they positively influence ability, motivation, and opportunities, thereby increasing employee performance, operational performance, and financial performance. However, based on the formative measurement approach we chose, and in contrast to such general statements, we suggest that firms should focus on job security, continuous training, information-sharing, and career opportunities, since these aspects are the most important performance drivers. In contrast, other practices (especially semi-autonomous team work, but also profit-based pay) don't significantly contribute HPWP effects; thus, we encourage firms to reconsider their value in relation to increased performance. Our findings have also highlighted that HPWP influence operational and financial performance beyond employee performance. Firms should consider these additional gains when thinking about the usefulness of investing in HRM practices.

In conclusion, our study provides a deeper understanding of the relationships between high-performance work systems and firm performance in Germany. By integrating human capital and employee attitudes as well as employee performance and operational performance as key mediators, we were able to show how HPWP effects unfold in detail. Our findings provide further evidence of HPWP value to increase firm performance and reveal some peculiarities of the German context. Our results also point to different importances of the considered HPWP, which provide useful implications for HRM practice.

REFERENCES

Amable B (2003) *The diversity of modern capitalism*. Oxford: Oxford University Press.

Appelbaum E, Bailey T, Berg P and Kalleberg AL (2000) *Manufacturing advantage: Why high performance work systems pay off*. Ithaca, NY: Cornell Univ. Press.

Bakker AB and Demerouti E (2007) The Job Demands-Resources model: State of the art. *Journal of Managerial Psychology* 22(3): 309–328.

Baluch AM, Salge TO and Piening EP (2013) Untangling the relationship between HRM and hospital performance: The mediating role of attitudinal and behavioural HR outcomes †. *The International Journal of Human Resource Management* 24(16): 3038–3061.

Barney J (1991) Firm Resources and Sustained Competitive Advantage. *Journal of Management* 17(1): 99–120.

Batt R (2002) Managing Customer Services: Human Resource Practices, Quit Rates, and Sales Growth. *Academy of Management Journal* 45(3): 587–597.

Batt R and Colvin AJS (2011) An Employment Systems Approach to Turnover: Human Resources Practices, Quits, Dismissals, and Performance. *Academy of Management Journal* 54(4): 695–717.

Beer M (2015) HRM at a Crossroads: Comments on “Evolution of Strategic HRM Through Two Founding Books: A 30th Anniversary Perspective on Development of the Field”. *Human Resource Management* 54(3): 417–421.

Bergkvist L and Rossiter JR (2007) The Predictive Validity of Multiple-Item Versus Single-Item Measures of the Same Constructs. *Journal of Marketing Research* 44(2): 175–184.

Blau PM (1964) *Exchange and power in social life*. New York: Wiley.

Boxall PF and Purcell J (2016) *Strategy and Human Resource Management*. London, New York, NY: Palgrave.

Brewster C (1999) Strategic Human Resource Management: The Value of Different Paradigms. *Management International Review* 39(3): 45–64.

Brewster C and Mayrhofer W (2009) Comparative HRM: The debates and the evidence. In: Collings DG and Wood G (eds) *Human resource management: A critical approach*. London, New York: Routledge, pp. 278–295.

Ceylan C (2013) Commitment-based HR practices, different types of innovation activities and firm innovation performance. *The International Journal of Human Resource Management* 24(1): 208–226.

Coff R and Kryscynski D (2011) Invited Editorial: Drilling for Micro-Foundations of Human Capital-Based Competitive Advantages. *Journal of Management* 37(5): 1429–1443.

Coltman T, Devinneey TM, Midgley DF and Venaik S (2008) Formative versus reflective measurement models: Two applications of formative measurement. *Journal of Business Research* 61(12): 1250–1262.

Combs J, Lui Y, Hall A and Ketchen D (2006) How much do High-Performance Work Practices matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology* 59(3): 501–528.

Curtis B, Hefley WE and Miller S (1995) *People capability maturity model*. Pittsburgh: Carnegie Mellon University.

Debus ME, Probst TM, Konig CJ and Kleinmann M (2012) Catch me if I fall! Enacted uncertainty avoidance and the social safety net as country-level moderators in the job insecurity-job attitudes link. *The Journal of applied psychology* 97(3): 690–698.

Delaney JT and Huselid MA (1996) The Impact of Human Resource Management Practices on Perceptions of Organizational Performance. *Academy of Management Journal* 39(4): 949–969.

Delery JE and Doty DH (1996) Modes of theorizing in strategic human resource management: tests of universalistic, contingency, and configurational performance predictions. *Academy of Management Journal* 39(4): 802–835.

Doty DH, Glick WH and Huber GP (1993) Fit, Equifinality, and Organizational Effectiveness: A Test of Two Configurational Theories. *Academy of Management Journal* 36(6): 1196–1250.

Drabe D, Hauff S and Richter NF (2014) Job satisfaction in aging workforces: An analysis of the USA, Japan and Germany. *The International Journal of Human Resource Management* 26(6): 783–805.

Dyer L and Reeves T (1995) Human resource strategies and firm performance: what do we know and where do we need to go? *The International Journal of Human Resource Management* 6(3): 656–670.

Festing M (2012) Strategic Human Resource Management in Germany: Evidence of Convergence to the U.S. Model, the European Model, or a Distinctive National Model? *Academy of Management Perspectives* 26(2): 37–54.

Gallie D (2007) *Employment regimes and the quality of work*. Oxford: Oxford Uni. Press.

Gittell JH, Seidner R and Wimbush J (2010) A Relational Model of How High-Performance Work Systems Work. *Organization Science* 21(2): 490–506.

Godard J (2004) A Critical Assessment of the High-Performance Paradigm. *British Journal of Industrial Relations* 42(2): 349–378.

Gouldner AW (1960) The Norm of Reciprocity: A Preliminary Statement. *American Sociological Review* 25: 161–178.

Guest DE (2011) Human resource management and performance: still searching for some answers. *Human Resource Management Journal* 21(1): 3–13.

Hair JF, Hult GTM, Ringle CM and Sarstedt M (2017) *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: SAGE.

Hall PA and Soskice DW (2001) *Varieties of capitalism: The institutional foundations of comparative advantage*. Oxford: Oxford University Press.

Hansen GS and Wernerfelt B (1989) Determinants of firm performance: The relative importance of economic and organizational factors. *Strategic Management Journal* 10(5): 399–411.

Hauff S, Alewell D and Hansen NK (2014) HRM systems between control and commitment: Occurrence, characteristics and effects on HRM outcomes and firm performance. *Human Resource Management Journal* 24(4): 424–441.

Hauff S and Richter N (2015) Power distance and its moderating role in the relationship between situational job characteristics and job satisfaction. *Cross Cultural Management: An International Journal* 22(1): 68–89.

Huselid MA (1995) The Impact of Human Resource Management Practices on Turnover, Productivity, and Corporate Financial Performance. *The Academy of Management Journal* 38(3): 635–672.

Huselid MA and Becker BE (2000) Comment on 'Measurement error in research on human resources and firm performance: How much error is there and how does it influence effect size estimates?' by Gerhard, Wright, McMahan and Snell. *Personnel Psychology* 53(4): 835–854.

Jackson SE, Schuler RS and Jiang K (2014) An Aspirational Framework for Strategic Human Resource Management. *The Academy of Management Annals* 8(1): 1–56.

Jayawardana AK, O'Donnell M and Jayakody J (2013) Job involvement and performance among middle managers in Sri Lanka. *The International Journal of Human Resource Management* 24(21): 4008–4025.

Jiang K, Lepak DP, Han K, Hong Y, Kim A and Winkler A-L (2012a) Clarifying the construct of human resource systems: Relating human resource management to employee performance. *Human Resource Management Review* 22(2): 73–85.

Jiang K, Lepak DP, Hu J and Baer JC (2012b) How Does Human Resource Management Influence Organizational Outcomes? A Meta-analytic Investigation of Mediating Mechanisms. *Academy of Management Journal* 55(6): 1264–1294.

Jiang K, Takeuchi R and Lepak DP (2013) Where do We Go From Here? New Perspectives on the Black Box in Strategic Human Resource Management Research. *Journal of Management Studies* 50(8): 1448–1480.

Katz D and Kahn RL (1978) *The Social Psychology of Organizations*. New York: Wiley.

Kaufman BE (2015) Evolution of Strategic HRM as Seen Through Two Founding Books: A 30th Anniversary Perspective on Development of the Field. *Human Resource Management* 54(3): 389–407.

Lepak DP, Liao H, Chung Y and Harden EE (2006) A Conceptual Review Of Human Resource Management Systems In Strategic Human Resource Management Research. *Research in Personnel and Human Resource Management* 25: 217–271.

Liao H, Toya K, Lepak DP and Hong Y (2009) Do they see eye to eye? Management and employee perspectives of high-performance work systems and influence processes on service quality. *Journal of Applied Psychology* 94(2): 371–391.

Lindell MK and Whitney DJ (2001) Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology* 86(1): 114–121.

Nitzl C, Roldan JL and Cepeda G (2016) Mediation analysis in partial least squares path modeling. *Industrial Management & Data Systems* 116(9): 1849–1864.

Osterman P (1987) Choice of Employment Systems in Internal Labor Markets. *Industrial Relations* 26(1): 46–67.

Paauwe J (2009) HRM and Performance: Achievements, Methodological Issues and Prospects. *Journal of Management Studies* 46(1): 129–142.

Podsakoff PM, MacKenzie SB, Lee J-Y and Podsakoff NP (2003) Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology* 88(5): 879–903.

Posthuma RA, Campion MC, Masimova M and Campion MA (2013) A High Performance Work Practices Taxonomy: Integrating the Literature and Directing Future Research. *Journal of Management* 39(5): 1184–1220.

Preacher KJ and Hayes AF (2008) Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods* 40(3): 879–891.

Ringle CM and Sarstedt M (2016) Gain more insight from your PLS-SEM results. *Industrial Management & Data Systems* 116(9): 1865–1886.

Ringle CM, Wende S and Becker J-M (2015) *SmartPLS 3*. Available at: http://www.smartpls.com.

Saridakis G, Lai Y and Cooper CL (2017) Exploring the relationship between HRM and firm performance: A meta-analysis of longitudinal studies. *Human Resource Management Review* 27(1): 87–96.

Schaller TK, Patil A and Malhotra NK (2015) Alternative Techniques for Assessing Common Method Variance: An Analysis of the Theory of Planned Behavior Research. *Organizational Research Methods* 18(2): 177–206.

Su Z-X and Wright PM (2012) The effective human resource management system in transitional China: a hybrid of commitment and control practices. *The International Journal of Human Resource Management* 23(10): 2065–2086.

Subramony M (2009) A meta-analytic investigation of the relationship between HRM bundles and firm performance. *Human Resource Management* 48(5): 745–768.

Takeuchi R, Lepak DP, Wang H and Takeuchi K (2007) An empirical examination of the mechanisms mediating between high-performance work systems and the performance of Japanese organizations. *Journal of Applied Psychology* 92(4): 1069–1083.

Wall TD, Michie J, Patterson M, Wood SJ, Sheehan M, Clegg CW, et al. (2004) On the validity of subjective measures of firm performance. *Personnel Psychology* 57(1): 95–118.

Whitley R (2003) The Institutional Structuring of Organizational Capabilities: The Role of Authority Sharing and Organizational Careers. *Organization Studies* 24: 667–695.

Appendix: Descriptive Analyses and Pairwise Correlations

		Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	Comprehensive recruitment/selection	3.02	1.241																			
2	Continuous training	3.94	1.032	.289***																		
3	Profit-based pay	2.97	1.151	.059*	-.081***																	
4	Extensive benefits	2.92	1.140	.157***	.182***	.036																
5	Clear career paths	2.72	1.206	.287***	.331***	.008	.175***															
6	Job security	4.38	.743	.029	.213***	-.032	.137***	.152***														
7	Task variety	3.88	.846	.197***	.188***	.026	.012	.138***	.178***													
8	Semi-autonomous work groups	2.98	1.187	.125***	.093***	.035	.031	.120***	.085***	.211***												
9	Empowerment	3.11	.965	.249***	.172***	.122***	.087***	.180***	.152***	.333***	.152***											
10	Information-sharing	3.90	.780	.158***	.218***	.057*	.090***	.168***	.260***	.244***	.129***	.325***										
11	Qualified employees	4.06	.698	.187***	.256***	.018**	.125***	.163***	.294***	.229***	.074**	.212***	.307***									
12	Up-to-date knowledge	3.84	.737	.277***	.303***	.023	.112***	.216***	.259***	.264***	.135***	.270***	.283***	.512***								
13	Motivation	3.95	.705	.139***	.204***	.069**	.098***	.119***	.221***	.296***	.100***	.283***	.373***	.372***	.370***							
14	Job satisfaction	3.64	.691	.137***	.181***	.046	.139***	.163***	.325***	.212***	.063**	.275***	.365***	.359***	.346***	.538***						
15	Commitment	4.17	.718	.024	.108***	-.012	.075**	-.007	.326***	.110***	.051*	.116***	.199***	.208***	.148***	.347***	.403***					
16	Individual performance	4.02	.677	.205***	.200***	.071**	.089***	.162***	.255***	.288***	.126***	.263***	.303***	.461***	.490***	.554***	.439***	.268***				
17	Productivity	3.56	.725	.110***	.116***	.041	.117***	.120***	.175***	.086***	.061**	.112***	.206***	.211***	.191***	.216***	.224***	.116***	.253***			
18	Quality	4.27	.647	.140***	.139***	.066**	.114***	.076**	.188***	.152***	.084***	.102***	.268***	.280***	.262***	.204***	.233***	.150***	.306***	.351***		
19	Innovation capability	3.53	.956	.197***	.039	.111***	.038	.104***	.124***	.157***	.109***	.158***	.230***	.216***	.259***	.217***	.193***	.095***	.257***	.340***	.469***	
20	Profits	3.15	.872	.156***	.114***	.003	.087***	.193***	.177***	.093***	.032	.104***	.140***	.193***	.167***	.094***	.182***	.053*	.166***	.325***	.243***	.216***

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.